

WORKPLACE SAFETY AND HEALTH GUIDE

FOR THE SASKATCHEWAN HOG INDUSTRY



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- Manitoba Labour, Workplace Safety and Health Division
- Elite Swine Inc.
- The Puratone Corporation
- Assiniboine Community College
- Centre for Agricultural Medicine, University of Saskatchewan
- Department of Public Health Services, University of Alberta
- Industry stakeholders

Readers should refer to the Saskatchewan Occupational Health and Safety Regulations, 1996 for legal requirements.

Other sources for information:

- Agriculture and Agri-Food Canada
- Saskatchewan Ministry of Labour Relations and Workplace Safety
- Canadian Agricultural Safety Association
- Saskatchewan Safety Council



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INTRODUCTION

Health and Safety Manual Background

Thousands of Saskatchewan residents are employed directly in the production of pork. This means that workers can be exposed, on a daily basis, to safety and health risks that are unique to the hog barn environment.

These risks can include slips and falls while working with large animals. Gases and dust produced in the barn environment can threaten your short-term and long-term health. Noise levels, chemicals used for barn disinfection, veterinary product usage and diseases that are transmissible from pigs to humans are some of the other threats potentially found in the hog barn environment.

Fortunately, these risks can be minimized and eliminated easily. For example, protecting your hearing during feeding time is as easy as wearing earplugs. More serious are the cases each year where farmers die after entering a manure pit or tank. While these instances are extremely tragic, the life-saving solution is as simple as not entering the tank in the first place.

This ***Workplace Safety Guide for the Saskatchewan Hog Industry*** is meant to make all those involved in primary pork production aware of the safety and health risks that are unique to the pork production environment. Through awareness of these risks you can protect yourself, your co-workers, your employees and your family from unnecessary pain and distress.

This manual does not cover every risk and does not replace acts, regulations or guidelines governing workplace health and safety in Saskatchewan. Employers and employees must exercise due diligence in taking reasonable care to avoid injury, ensure compliance of rules and regulations as well as proper use of protective equipment to safeguard against injury or illness.

Safety and Health Responsibilities

Keep a copy of this reference manual accessible to all employees and ensure proper occupational health and safety training has been provided.

Everyone in the workplace shares in the responsibility to make the workplace healthy and safe, however, the greater the authority a person has, the greater their responsibility. Owners and employers must become familiar with the laws and regulations that apply to the pork production industry. Occupational health committees and occupational health and safety representatives also have important roles in maintaining a healthy and safe workplace.

For specific information on workplace safety contact the Saskatchewan Ministry of Labour Relations and Workplace Safety.

■ How Do I Use This Manual?

Use the manual as a reference only. This manual is not intended to replace applicable acts, regulations and guidelines that govern workplace safety and health in Saskatchewan.

Language barriers to effective safety and health training

Saskatchewan's pork industry is attracting increasing numbers of workers from abroad. Language and literacy differences among workers mean that safety education may have to be tailored to each individual working in the barn.

Ensure sure all workers understand your safety and health policies, regardless of language and literacy challenges.

Remember, the employer is responsible for providing a safe and healthy workplace by providing personal protective equipment, information and training with respect to safety and health issues.

EMPLOYERS: How Safety Conscious Are You?

- Do I know the laws that apply to my barn with respect to safety and health standards?
- Do I maintain my equipment, machinery, tools and the facility?
- Do I see to the proper use of equipment, machinery and tools?
- Do I provide appropriate personal protective equipment, and enforce its use?
- Do I provide training for the use of personal protective equipment, and make sure it is well-maintained and properly stored?
- Do I ensure that facility hazards are identified and labelled (particularly confined spaces)?
- Do I provide first aid training and first aid kits in the barn?
- Do I display emergency phone numbers?
- Have I developed an emergency plan, and trained my staff in steps to take in case of an emergency?

Do Your Part to Make your Workplace a Safer Environment

When developing effective training programs for your employees, you will likely need more information than is provided in this manual. Contact the Saskatchewan Ministry of Labour Relations and Workplace Safety.

■ Employer Responsibilities

It is the employer's responsibility to make him or herself aware of the current regulations that apply to the safe operation of the facility.



EMPLOYEES... How Safety Conscious Are You?

- Do I use machinery and tools in the manner instructed by my employer?
- Do I report damage to equipment, facilities, tools and machinery to my employer or supervisor immediately?
- Do I use the personal protective equipment supplied by my employer?
- Do I use the provided protective equipment in the manner instructed by my employer?
- Where facility hazards are identified, do I pay attention to the warning on the label?
- Have I taken a first aid course, and do I know where the first aid kits are located in the barn?
- Do I know where emergency phone numbers are listed?
- Do I know the facility's emergency plan for dealing with injuries and accidents?

■ Employee's Responsibilities

It is the employee's responsibility to follow the safety and health policies as outlined by the employer including using all equipment and tools in the facility in the manner for which it was designed and as the employer instructed.

WHAT ARE WHMIS AND MSDS?

Definitions and Resources

WHMIS stands for Workplace Hazardous Materials Information System. WHMIS is a Canadian national system originally developed in 1988 to provide information about safe handling and storage of hazardous materials.

MSDS stands for Material Safety Data Sheets, which are described below.

Controlled products include any products which fall within the hazard criteria as presented in the Controlled Product Regulation of Health Canada's Hazardous Products Act. Most hazardous products are controlled products and subject to WHMIS regulation, meaning the three components of WHMIS must be satisfied.

A number of products are exempt from the WHMIS regulation as they are covered under other legislation. Also, labelling requirements may vary. It is important that you determine which rules apply to the products you are using. Consult the appropriate Acts and Regulations:

WHMIS was updated in 2015 and as of December 1, 2018, employers must ensure they are in full compliance with WHMIS 2015.

■ For more information contact:

Saskatchewan Ministry of Labour Relations and Workplace Safety Occupational Health and Safety Division

300 - 1870 Albert Street, Regina, SK S4P 4W1

Tel: (306) 787-7404

Web: <https://www.saskatchewan.ca/business/safety-in-the-workplace>

WorkSafe Saskatchewan

200 – 1881 Scarth Street, Regina, SK S4P 4L1

Toll-Free: 800-667-7590

Fax: 306-787-4311

Toll-Free Fax: 888-844-7773

<http://www.worksafesask.ca/>

WorkSafe is a partnership between the Saskatchewan Workers' Compensation Board (WCB) and the Ministry of Labour Relations and Workplace Safety (LRWS).

WHMIS Classifications

WHMIS classifications are more than just symbol recognition (see next page). The employer must make Material Safety Data Sheets (MSDS) available and immediately accessible for each controlled product in the barn's inventory. All staff must receive training in understanding the MSDS and in the use of any specialized equipment identified on the MSDS, including personal protective equipment. Employees must also be aware of first aid procedures to follow in case of accidental exposure.



GAS CYLINDERS

Pose an explosive danger because these gases are contained under pressure.

May cause container to explode if heated in a fire or subjected to impact forces.



POISONOUS AND INFECTIOUS MATERIALS

Materials causing immediate and serious toxic effects.

May be fatal or cause permanent damage if inhaled, swallowed, or entered into the body through skin contact.



FLAMMABLE AND COMBUSTIBLE MATERIALS

Material that will burn or may burst into flame spontaneously in air, or release a flammable gas on contact with water vapour.

May cause fire when exposed to heat, sparks, flames, or as a result of friction.



MATERIALS CAUSING OTHER TOXIC EFFECTS

A poisonous substance that may not be immediately dangerous to health. May cause death or permanent damage as a result of repeated exposures over time.

May be a sensitizer (produce chemical allergies), cause cancer, birth defects, or sterility.



OXIDIZING MATERIALS

Pose a fire and/or explosion risk in the presence of flammable or combustible material.

May react violently or cause an explosion when contacting combustible materials.



CORROSIVE MATERIALS

Causes eye or skin tissue damage upon contact.

May be harmful if inhaled.



EXPLODING BOMB

For explosion or reactivity hazards.



BIOHAZARDOUS INFECTIOUS MATERIALS

For organisms that can cause disease in people or animals.

Identifies biological agents or conditions that create hazards for humans or the environment.



EXCLAMATION POINT

May cause less serious health effects or environmental damage.

Identifies substances that are toxic to skin, eyes or organs, and substances that can harm the ozone layer.

Three Components of WHMIS

Labels

Controlled products come with supplier labels. This label identifies the product and the manufacturer, displays the chemical hazard symbol and may include first aid measures, referral to the appropriate MSDS, risk phrases and precautionary measures.

The employer must use a workplace label if controlled product is transferred from a bulk container to a smaller container. This label alerts the user to the hazards of the product and the precautions that should be taken when using it.

Material Safety Data Sheets (MSDS)

MSDS are available for any controlled product that you receive. These data sheets should be made immediately accessible to all workers who handle controlled products. The MSDS includes information on:

- hazardous ingredients
- preparation information
- product information
- physical data
- fire or explosive hazards
- reactivity data
- toxicological properties
- preventive measures
- first aid measures

Worker Education

The employee must receive instruction regarding the information on:

- supplier labels, workplace labels, and MSDS
- procedures for the safe use, storage, handling and disposal of controlled products
- procedures to be followed in case of an emergency involving a controlled product.

■ **Employer Responsibilities**

The employer is responsible for providing on-site WHMIS training for the use and handling of products used on that site.

ANIMAL HANDLING SAFETY

In Canada, the majority of injuries occur in the agricultural sector. Employees who are not trained in appropriate and safe animal handling are at greater risk of injury. This can result from direct animal contact, neck and back injuries from improper lifting and animal movement, to slips and falls caused by a wet environment. Animal handling causes the great number of injuries.

Less frequent, but equally concerning are potential risks from bites, kicks, cuts, abrasions and needle pokes from syringes.

Proper animal handling is one of the most important factors in the well-being of humans and animals. Pigs are intelligent and perceptive animals and the employee's understanding of the fundamentals of pig behaviour result in a less stressful and safer workplace. In addition, the attitudes of workers are key to fostering safe work practices when working with pigs.

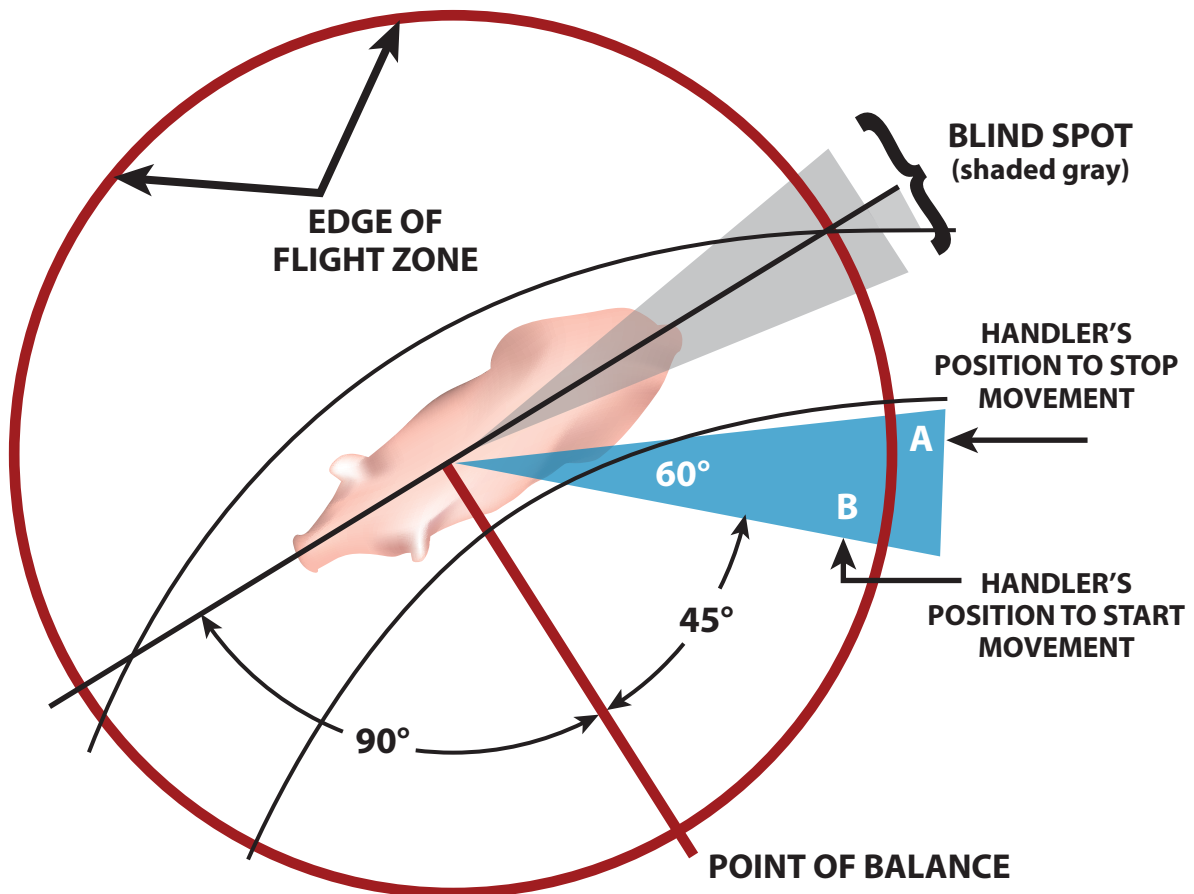
■ Facts

- Understanding pig behaviour helps facilitate easy handling.
- Knowing the facility setup will make animal movement easier.
- Knowing your whereabouts relative to the pig will allow for safer animal movement.
- Floors slippery from water, urine, and manure are hazards for both pigs and people.
- Keeping alleyways clear assists in trouble-free, stress-free pig movement, which in turn helps keep the workplace safe.
- Chase boards and shaker paddles are the most effective tools for moving pigs.



Animal Handling Basics

- Pigs' vision is nearly 360°.
- Perimeter around pig is called the flight zone.
- If a worker enters a pig's flight zone the animal will move.
- Direction of pig movement is determined by handler's position relative to the point of balance.
- Alley should be free of distractions to allow animals to move without stopping.
- Pigs tend to move from dark to light (but not too bright) areas.
- Pigs are herd animals and like to follow each other.
- Isolated pigs without visual contact of other pigs will become excited and stressed.



A Pig's Flight Zone, Point of Balance and Blind Spot

Area Specific Concerns

Breeding

- Tasks being performed put you in close contact with the pigs
- The pigs are very large
- Work space may be tight
- Boars are unpredictable - always keep a chase board between yourself and the boar

Processing

- Common injuries include punctures, cuts and needle sticks
- Repetitive work leads to loss of focus from fatigue
- Repetitive motion injuries
- Lower back strain from standing on concrete floors

Weaning

- Minimal injuries during this phase
- Weaning stresses sows which can lead to aggressive behaviour
- Back injuries may occur at this time from improper lifting techniques


Nursery

- Injuries can occur during sorting
- Lifting can cause back injuries

Finisher

- Loading and unloading is where most injuries occur
- Animals in transit are stressed and must be handled carefully. Ensure personnel are trained in the correct procedures





What does this mean for me?

- Know the temperament of the animals you are working with – are they easily stressed (i.e., gilts), or quiet and calm?
- Set up the barn for animal movement before beginning to move the animals – place gates in proper positions.
- Practice good housekeeping – keep alleys and halls clear of clutter and distraction.
- Keep light consistent – if loading at night, install a light in the trailer; if loading during times of bright sunlight, block the light from shining in.
- Avoid overuse of muscles and joints when doing repetitive tasks by varying your activities - this will help prevent repetitive strain injuries.
- Enter each pen daily and always handle animals considerately - pigs that trust people move more quietly and cooperatively.
- Use proper moving equipment - chase boards and shaker paddles are the most effective way of moving pigs
- Practice good posture and lifting techniques - lift with your legs, not with your back
- Take advantage of herding instincts and move animals in small, manageable groups - groups move better by pushing the leader, rather than pushing the whole group from behind.

Recommended Group Sizes for Moving Pigs

Entering Nursery	20
Entering Finishing	10
Leaving Finishing	6
Breeding Stock	4-6

What Type of Animal Moving Equipment Should I Use?

- Use chase boards that are properly sized for the alley in which you are moving the animal.
- Use positive behaviours and gestures when moving pigs (i.e., pats and rubs).
- Avoid using slappers, buzzers and electric prods. These are stressors which cause unpredictable behaviour and undue stress on the animals.
- Use paddles or brooms as small versions of chase boards to get sows out of crates.
- Slappers are appropriate tools for moving pigs only if used to make noise by hitting the wall, or other surface. Today's lean pigs are more susceptible to bruising and stress - these can affect your bottom line.



Proper animal handling not only makes the workplace safer for you, it increases pig productivity and your bottom line!

For more information, refer to the Smart Pig Handling Videos (produced by Manitoba Pork)

View on line at saskpork.com

Chapter 1: Basic Pig Behavior

Chapter 2: Principles of Pig Handling

Chapter 3: Handling Sows and Boars

Chapter 4: Handling of Piglets and Nursery Pigs

Chapter 5: Handling Growers and Market Hogs

Chapter 6: Loading and Unloading

Code of Practice for the Care and Handling of Pigs – 2014

<http://www.nfacc.ca/codes-of-practice/pigs>

PROTECT YOUR HEARING!

Noise is a serious concern in the agricultural community and pork production is no exception. Research demonstrates greater hearing loss in the farming community when compared to age-matched counter-parts that were not part of the farming community.

Noise induced hearing loss can be the result of exposure to continuous or intermittent harmful noise levels, without proper hearing protection.

How Much Noise Is Too Much?

- Repeated exposure to average daily noise levels of 85 dBA or greater can cause hearing loss.
- For every 3 dBA increase in noise level the safe maximum daily exposure level time is halved

Noise Level (dBA)	Maximum Exposure Time (hrs)*
85	8
88	4
91	2
94	1
97	0.5
100	0.25
>100	0

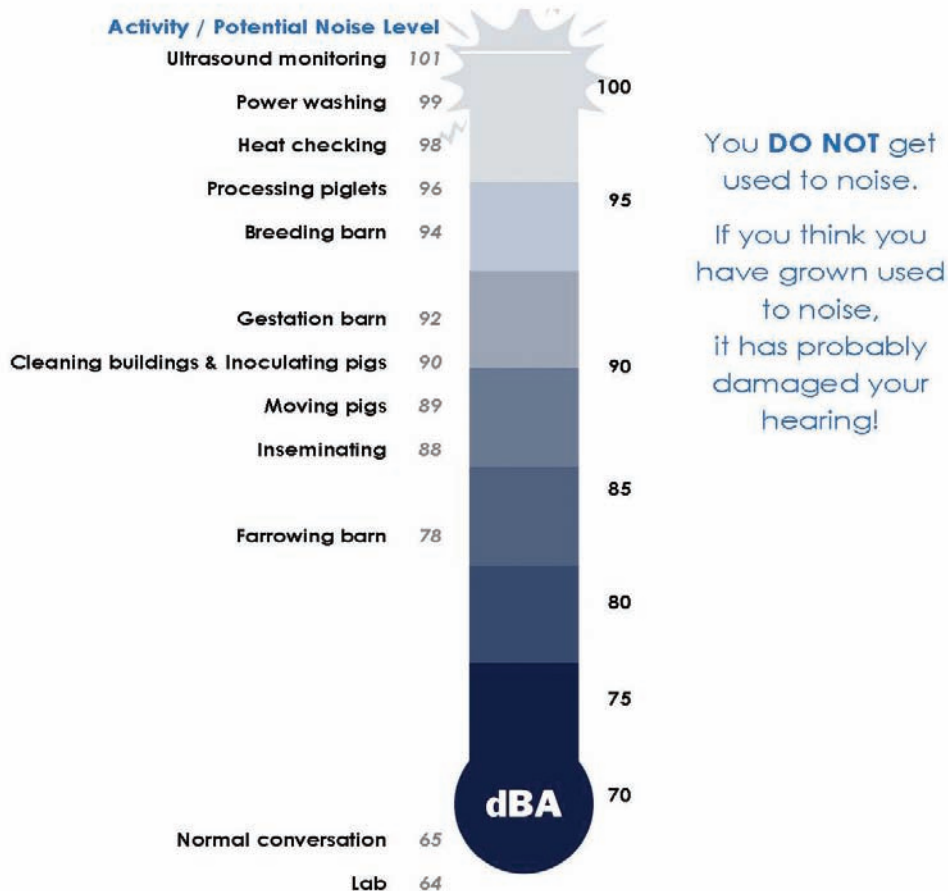
**Safe maximum daily exposure time without hearing protection Source: Noise Exposure Limits – Worksafe Saskatchewan*

■ Facts

- Noise induced hearing loss is very serious because it is painless and often goes unnoticed until a substantial amount of loss has already occurred. Once lost, it can never be regained.
- If you have to raise your voice to be heard over background noise at a distance of 1 metre from your partner, the noise level is probably loud enough to damage your hearing.
- Difficulty hearing well at the end of the day or in crowds likely indicates hearing loss is occurring.

Noise on the Job

Hearing protection is required with noise over 85dBA



SWINE WORKERS

Source: Canadian Centre for Health and Safety
in Agriculture (CCHSA)
UNIVERSITY OF SASKATCHEWAN

What Can I do to Protect My Hearing?

- Step back from the source of noise when discussing matters with co-workers. When the distance between the worker and the source of the noise is doubled, the sound level is reduced by 6 dB.
- Always use proper hearing protection when working in noise hazard areas. A short sudden squeal may cause damage.

Source of Noise	dBA
Swine barn nursery	66-69
John Deere 8560	76.5
Ventilation fan - Chore Time 18RLX	77
Hammermill	94
Gestation barn	95-104
Chainsaw	115
Swine in confinement at feeding	121-133
Swine in confinement at feeding	135-139

Source: Centre for Agricultural Medicine, 1997

What About Hearing Loss?

- First tones lost are those above normal speech tones.
- Significant hearing impairment has occurred by the time your ability to hear normal conversation is affected.
- Noise exposed workers should be provided with an opportunity to have an audiometric (hearing) test at least once every two years.

When exposure to loud noises is occurring, take all possible steps to reduce the noise or isolate the worker.

What Types of Hearing Protection Are There?

Ear Plugs

- rubber or plastic
- inserted into ear canal
- should fit well
- ideally fitted by audiologist
- cotton plugs are not effective in reducing damaging sound levels

Ear Muffs

- worn over the external part of ear
- can be taken off quickly and put on as needed
- ideal where loud noise is intermittent

What to Look for in Hearing Protection

A choice of hearing protection should be provided. People should select hearing protection according to their individual needs. Factors to consider include:

- Noise Reduction Rating (NRR) - look for protection that offers a 29-31 dBA reduction in noise level.
- Comfort - properly fitted ear plugs are more likely to be worn consistently.
- Noise level in the workplace - certain areas require more protection.
- The need to wear other equipment for the work environment - choose hearing protection that is compatible with other protective equipment being used.
- It is important that hearing protection is well-fitted.

Failure to completely insert the earplug into the ear canal can actually cause amplification of the noise, rather than decreasing it.



AIR QUALITY IN THE HOG BARN

Livestock reared in confinement produce heat, moisture and manure. Both the manure and the animals in the production units produce gases. Feed, manure, animals and bedding all contribute to dust production in the barn. The atmosphere in livestock buildings, particularly where ventilation is limited, can adversely affect human health.

Although production agriculture is currently not inspected as frequently as other industries, the standards for exposure to airborne contaminants are the same. It is important to maintain as low a level of contaminants as possible.

The mixture and level of these contaminants in a swine barn depend on:

- class and number of animals confined
- style of building and type of ventilation and heating systems
- type of feed and feed handling system
- type and frequency of waste disposal
- time of year
- overall cleanliness of the unit

Workers may not notice ill effects from airborne contaminants immediately. Symptoms develop over time and include coughing, wheezing, and the development of allergies and chronic bronchitis.

DUST: What's in it?

Dust – solid particles of a wide range of sizes that may be either settled or airborne. Dust in the swine barn can consist of:

- particles of ammonia
- grain mites
- feed particles
- insect parts
- swine or rodent fecal dust
- shed skin cells
- minerals
- bacteria
- ash
- mould
- pollen
- infectious agents



How much is too much?

- Levels of respirable dust should not exceed 3 milligrams/cubic metre (mg/m³) in other industries, but it is recommended that barn dust should not exceed 0.23 mg/m³ due to its biologically active nature. Levels of total dusts should not exceed 10 mg/m³.
- By the time dust levels reach 10 – 20 mg/m³ a definite haze is visible.

What does this mean for me?

- Wear appropriate protective equipment at all times, taking special care during feeding, animal moving, and in cold temperatures.
- In winter, levels of respirable dust may be at least 3 times higher than the maximum level tolerable.
- Some people are more sensitive and will have difficulties at dust levels lower than this maximum.

■ Fact

Up to 85% of dust in swine barns is **respirable dust**, so small it can be inhaled into the lungs. Larger particles constitute the **inhalable dust** component, which is filtered out before reaching the lungs.

- 70 – 90% of barn dust is organic. Organic dust is biologically active, meaning our respiratory defense system will react (causes coughing, mucus production, and possible allergic reaction).
- Highest levels of dust occur during feeding, feed grinding and animal movement.
- Dust is especially concentrated in winter.
- Dust is always present in the atmosphere.

Respiratory Problems: What Should I Know?

Reactions to dust can be immediate or delayed:

- Immediate symptoms include eye irritation, nasal stuffiness, runny nose and itchy throat
- Delayed symptoms can include headache, nausea or vomiting, fever, unproductive coughing and difficulty breathing.

There are 3 Types of Health Effects

Temporary damage

- Symptoms will disappear rapidly when the person is no longer exposed to dust.

Insidious damage

- Development of bronchitis or occupational asthma after long term exposure to dust.
- Not as severe as an allergic reaction.
- Respiratory system may recover entirely when no longer exposed to dust.
- Symptoms include coughing, shortness of breath and decreased pulmonary capacity

Permanent lung damage:

- Damage that occurs when continuously exposed to dusty environments for long periods of time without proper protection, may develop even without signs of obvious allergic reaction.
- Tissues are permanently affected leading to decreased respiratory capacity.
- Irreversible



GASES

There are 5 gases produced in pork production units - three from manure storage pits (ammonia, methane, hydrogen sulfide), one from animals breathing (carbon dioxide), and one from the burning of fossil fuels (carbon monoxide). These gases are irritants at low concentrations, but at higher concentrations can be deadly.

What does this mean for me?

- **Assume that the manure pit and surrounding areas are Immediately Dangerous to Life and Health (IDLH).** Monitor gas levels on a continual basis - ask about colorimetric detection tubes, personal alarms and carbon monoxide detectors at your nearest safety equipment supply company.
- All facilities should have an **Emergency Response Plan** to follow should levels of toxic gas become dangerous. See the chapter -“Developing Your Emergency Response Plan” in this manual.
- Be sure **you know** and **can implement** the emergency response plan.
- **Maximize ventilation when emptying pits - even in cold weather.**
- Empty pits at a time when “bad” air will be replaced with fresh air before workers re-enter the barn.
- Agitate pits only after one half of the contents have been pumped out.
- Begin agitating slowly and gradually increase agitator speed.
- Empty pits frequently - never allow pits to fill completely.
- Gas levels are higher in winter because of decreased ventilation.
- Gases that are dangerous to the worker are also dangerous to the animals.
- Methane is explosive at concentrations above 5% by volume of air. Hydrogen sulfide is explosive at concentrations as low as 4.3%. **DO NOT SMOKE IN BARN!**
- Use caution when operating gas-powered equipment indoors unless the engine can be placed outside, away from air intakes.

Symptoms of CO poisoning include headache, dizziness, confusion and staggering.

■ FACTS

- Increased levels of toxicity occur during gutter flushing, pit agitation and emptying.
- Gas levels are reduced by frequent emptying of pits.
- An air space of 30 cm should be allowed in manure pits for storage of gases.
- Dangerous levels of gases build up quickly when ventilation fans are off – either by accident or in the event of a power failure.
- Even in barns, fatal CO levels from a small engine can be reached in as little as 30 minutes!

PREVALENT BARN GASES

Gas	Characteristics	Source	Saskatchewan 8-Hour Contamination Limit	Comments
Carbon Dioxide (CO₂)	Colourless and odorless; heavier than air; non flammable	Animal Respiration	5,000 ppm	Non-toxic, but elevated levels will displace oxygen in the air to act as an asphyxiant
Carbon Monoxide (CO)	Colourless, odourless, toxic	Fossil fuel burning (operation of gasoline engines)	25 ppm	Asphyxiant; toxic concentrations quickly absorbed; may cause illness in humans and pigs – small pigs and fetuses at greatest risk
Ammonia (NH₃)	Pungent; recognizable by acrid smell; colourless; lighter than air; flammable	Bacteria that live in faeces and urine	25 ppm	Most prevalent of all barn bases – irritates mucous membranes of eyes, nose and upper respiratory tract; long periods of exposure may cause respiratory disease
Methane (CH₄)	Highly flammable; lighter than air; colourless; odorless; explosive limits 5% - 15% concentration in air	Manure pits	N/A	Highly explosive (no open flames, sparks or smoking); reacts violently with oxygen – caution when using an oxyacetylene torch in barn
Hydrogen Sulfide (H₂S)	Rotten egg smell at low concentrations; highly toxic; numbs smell at high concentrations; flammable at 4% concentration in air	Breakdown of manure in areas where there is no oxygen (silos, manure pits)	10 ppm	Causes paralysis of olfactory system (smell) at 200 ppm; FATAL – 700 ppm can cause unconsciousness or death in 1 – 3 breaths; You should never be exposed to 20 ppm without an SCBA

*Saskatchewan 8-hour contamination limits are Time Weighted Averages (TWA):

Hydrogen Sulphide Awareness (H₂S) Training for Liquid Manure Handling Systems

The Prairie Swine Centre offers a 4-hour on-line H₂S Workshop that includes instruction in:

- Properties of H₂S
- Exposure limits to H₂S
- Detection of H₂S
- Demonstration of H₂S monitoring and safety equipment
- Identifying potentially hazardous locations
- Importance of Standard Operating Procedures (SOPs), and a hands-on approach to writing a procedure
- Rescue strategies
- Importance of implementing an emergency response plan

Who Should take the Awareness On-line Course?

Anyone working in an intensive livestock operation or is involved with the handling of liquid manure. Specifically employees and owner-operators in the following sectors:

- Swine Industry
- Dairy Industry
- Liquid Manure Transportation

What will you learn with the Hydrogen Sulphide Awareness Course?

- H₂S gas, its properties and threat to human health
- Strategies to reduce H₂S exposure
- How to be prepared
- How to work towards a safer workplace
- Rescue techniques and safety procedures
- Case study learning based on real experiences

For more information or to register contact:

Prairie Swine Centre

Telephone: **(306) 373-9922**

How Do I Protect Myself from Dust and Gases?

A wide variety of Personal Protective Equipment (PPE) are available. Use the device that is suited for your work environment or you **will not** be protected.

Any respiratory protection device, whether it be for dust, chemicals, or oxygen deficient/toxic environments, must be approved by a recognized agency such as the National Institute for Occupational Safety and Health (NIOSH). Follow the instructions on the package for fitting and intended use.

Disposable Respirators:

(dust/mist masks)

- Most common defense against respirable dust
- Satisfactory **only if well-fitted**
- Suitable when working in a feed mill area, during feeding or during animal movement
- Protect the wearer beyond normal dust exposure limits
- Most offer **no** protection against gases or fumes
- Some have an exhalation valve, which improves comfort

Chemical Cartridge Respirators:

(dust, certain gases and organic vapors)

- May have disposable or replacement-type face pieces
- Cartridges are replaced when the filter is exhausted
- Different types of cartridges are available to protect from different contaminants - **select the cartridge that is appropriate for your situation, using as indicated on the package.**
- None of the tight-fitting respirators (disposable, chemical cartridge respirators, gas masks) are effective for bearded people - beards prevent a proper seal.

Powered Air Purifying Respirator:

(excessive dust levels or pesticides)

- Consists of battery-powered fan unit, a helmet and face mask, and a replaceable filter or chemical cartridge.

- The fan assembly forces air through the filter to the breathing zone of the wearer.
- Much easier to breathe because no effort is required to draw air through the filter.
- Powered by battery strapped to wearers' backs or waists, or by an adapter from vehicle batteries.
- Can be used by people with beards or glasses.
- Select the cartridge or filter that is appropriate for your situation - **otherwise you will not be protected.**

Gas Masks:

(high concentrations of toxic gases)

- More effective than chemical cartridge respirators against high concentrations of toxic gases.
- Chemical filter in mask removes toxic vapors and particles.
- Replaceable canisters that are larger volume than chemical cartridges so may be used for longer periods of time.
- Fit of the mask is important for effectiveness
- Usually have a full face piece with an attached hose leading to a canister mounted on the wearer's belt.

Supplied-Air Respirators:

(for use in oxygen-deficient areas)

- Good for use in oxygen limited areas like manure pits, silos or bins containing high-moisture grain
- Two types - hose mask with blower and emergency air supply, or the Self-Contained Breathing Apparatus (SCBA)
- When using SCBA the wearer carries a portable supply of air that is independent of the environment
- Only the positive pressure SCBA is suitable in environments containing high levels of toxic gases, such as H₂S
- SCBA equipment is expensive and requires training for proper use.

The above devices DO NOT WORK in oxygen deficient environments! Supplied Air Respirators must be used if oxygen is limited in your work environment, or if toxic gases such as H₂S are likely to be present.

Gas and Dust Monitoring Equipment

A number of safety equipment suppliers offer a wide variety of gas monitoring and detection equipment, ranging from sophisticated electronic devices to small, inexpensive colorimetric detection tubes. Personal alarms, worn on work clothing, are available that will alert employees if the air quality in the work environment becomes compromised.

Consider using this equipment to characterize daily, weekly or seasonal changes in air quality in your barn. Use detection tubes to continuously monitor gas levels. Use this information to adjust your ventilation system to your benefit, the benefit of your employees and the health of your pigs.

Oil Sprinkling

Spraying a fine mist of canola, soybean, or mineral oil reduces the level of dust present in the air, and has been shown to significantly reduce the harmful effects of barn dust. Oil may be applied to pen and walkway floors using a backpack sprayer or a misting system. The cost of operating a misting system is less than \$1.00/pig and the dust reduction is significant.

Care and Storage of Protective Equipment

Store all personal protective equipment in a clean, dust-free place. A clean, re-sealable plastic bag can also serve as a storage unit. Do not use disposable respirators that are dirty. Replace chemical cartridges and filters after the recommended number of hours of use, as soon as breathing ease is reduced, or if chemical odours are detected. ***Remember that high levels of hydrogen sulfide will numb your sense of smell!***

Respiratory Protective Devices

The employer is responsible for providing all workers with training in respiratory protective devices (personal protective equipment). Fit testing must be done by a competent person in an approved manner. Training must also be provided to the worker in proper testing, maintenance, use and cleaning of the respiratory protective device and in its limitations.

The worker must be able to demonstrate that he or she:

- understands the training provided, pursuant to Section 88(2) clause (a);
- can test, maintain and clean the respiratory protective device; and
- can use the respiratory device safely.

For additional information on requirements of employers and workers, consult the Occupational Health and Safety Regulations, 1996.

Special Concerns: Confined Spaces

What is a confined space?

- Any space not intended or designed for continuous worker occupancy
- Any space which has a limited or restricted way of entering
- Any space in which there is a chance that normal levels of oxygen may be reduced, or some toxic or explosive gases may be accumulated or released
- Any space where mechanical hazards are present

MANURE PITS, GRAIN BINS, WATER WELLS AND TANKER TRAILERS ARE ALL EXAMPLES OF CONFINED SPACES.



FACTS

In the time it takes for you to take one breath of air, unprotected work in a confined space can kill you. **High levels of pit gases numb your sense of smell and cause unconsciousness in only 1 to 3 breaths!**

Recognizing confined spaces

It is critical that workers recognize the danger associated with entering a confined space. ALWAYS! Many accidents happen when someone thinks, "I will be down there just for a second" – but they never come back.

- Post hazard signs on all manure pits and other confined spaces
- Provide access to serviceable parts from outside the pit
- Fit all openings to manure pits with substantial covers
- Be aware that dangerous gases may pool in corners

Never enter a confined space unprotected, even to attempt a rescue. If emergency entry into a pit is necessary for rescue, call your local fire department (number should be posted) or 911!

A must for all production units

Self-Contained Breathing Apparatus (SCBA) equipment is necessary for confined space entry. This is specialized equipment and special training is required for its use. If maintenance work is required in a manure pit or tank, please call in a professional.

August 3, 2000 (Saskatoon Newsroom) - On Sept. 25, 1998, a morning manure crew discovered a silent manure truck near Lucky Lake that should have had a four-person crew. One man was found unconscious but alive in the truck's cab. Three others were found dead in the tank. They had died from toxic levels of hydrogen sulfide gas, a substance commonly found in pig manure.

Investigators believe the first victim, a 39 year old man had experience working in confined spaces such as manure tanks, must have opened the manhole on top of the tank and looked in. The concentration of hydrogen sulfide was so strong that he was immediately knocked unconscious and fell into the tank. Two other men followed in an attempt to help the first, and both also succumbed immediately to the fumes. The fourth man also attempted to help, but was able to pull himself out before collapsing.

The manure truck was equipped with a breathing apparatus, but it was not used.

The manure pit is an extremely dangerous environment. Ensure hazard signs are posted outside manure pits. To further decrease the need to enter a pit, locate serviceable parts so they can be accessed from outside the pit.

IF you have the required equipment and training...

... the following is an example of an entry procedure for a manure storage pit. Be sure you know your barn's procedure and most importantly, **be sure to follow the procedure in the event entry into a confined space is required** – even if it takes extra time to set up.

Plan the entry. Each unit should have a documented procedure for confined space entry. **Practice the plan annually.**

Use two “top men” - two observers who are **trained in first aid, CPR** and your farm's rescue procedure and the use of the pit retrieval system. Maintain constant contact with the top men while working in the confined space.

Monitor gas levels on an on-going basis. H₂S levels are most important in manure storage pits.

Ventilate the pit and surrounding area continuously to replace stale, toxic air with fresh, oxygenated air.

Fireproof. Flame resistant coveralls are recommended because of fire and explosion risk. Electrical equipment taken into the confined space must have ground-fault circuit interrupters.

Use a Self-Contained Breathing Apparatus (SCBA) with a warning alarm or escape bottle. Put the SCBA on **before** entering the confined space, and **never** remove your mask when you are inside the confined space.

Rubber boots and gloves will help prevent bacterial contamination.

If pit is dark, use a reliable light source.

Always use a retrieval system when entering a pit – if something goes wrong while you are in the pit, your top men can pull you out.



SAFETY MATTERS!

GENERAL SAFETY

Often we ignore potential hazards because of poor habits, failure to believe warning labels, fatigue or boredom. Overall safety in a pork production unit can be improved by ensuring some simple tasks are done properly. These minor tasks, many of which are classified as housekeeping, are important for maintaining a safe work environment.

Daily hazards encountered

- wet floors
- obstacles to trip over
- broken pens and gates
- chemicals
- lifting heavy objects
- noise

What does this mean for me?

- Whenever possible, wash floors when people have the least amount of travel to do in that area - this prevents slipping and tripping over water hoses.
- Always return tools, shovels and chase boards to their proper storage areas immediately after use - this prevents dangerous clutter.
- Perform all repairs immediately.
- **Always** wear proper protective equipment when handling chemicals - the employer is responsible for providing this equipment.
- Read product information so you know **safe use** of all sanitation products and other chemicals.
- **Always** practice proper lifting techniques.
- Get help, or use a lifting device when moving very heavy objects, such as removing dead sows from crates.
- Always wear hearing protective hearing equipment.



Safe Handling of Swine Injectables

Inject the Pig, not Yourself!

Some of the medications you give to your pigs can also affect you if you accidentally inject yourself. Medications meant for your pigs can cause localized inflammation around the injection site, or a more severe reaction if you are allergic.

Some drugs can be absorbed through the skin. Wash well after handling medications. Pregnant women should take special care when handling hormones used for synchronization and induced farrowing, such as oxytocin and prostaglandins or afterbirth from sows treated with these products. These chemicals can cause spontaneous abortion and secondary reproductive complications in women.

In the case of accidental injection:

- Find and read the MSDS and package insert for the product.
- Clean the area with water and antiseptic soap.
- If a local reaction such as swelling or itching occurs, rest and elevate the affected area.
- Seek prompt medical attention. Bring the package insert with you.
- Phone a poison control hotline.

How can I avoid needle stick injuries?

- Never straighten a bent needle
- Do not carry open needles in your pockets.
- Make sure the animal is properly restrained before giving the Injection.
- Use caution when climbing over a pen with a needle in your hand.
- Never remove needle caps by using your mouth.
- Do not leave unprotected needles on work surfaces, shelves, electrical panels or any area that may pose a risk to fellow workers.
- Avoid recapping needles if possible.
- If it is essential that a needle be recapped – scoop the cap from a surface, don't use your hands to hold the cap when recapping.
- Use a tubing device to attach the needle to the syringe (i.e., Slapshot) - this makes giving the injection easier.
- Dispose of used needles immediately in a puncture resistant sharps container (do not use milk jugs or pop bottles).
- Plan for safe handling and disposal of needles.



Safe Handling of Hog Barn Sanitizers

Although many different products are used for disinfection of hog barns, only a few chemical classes are widely used. Products can contain formaldehyde, chlorine and other compounds. Check the label of the product you are using to determine the active ingredient, and **pay close attention to product warnings!**

- **Formaldehyde** gas is used as a fumigant. It produces irritating fumes, is explosive, and is carcinogenic. When fumigating with formaldehyde, the facility must be depopulated, sealed and thoroughly ventilated before re-entry. A much safer method to apply formaldehyde is to use a vapour phase disinfectant (eg., Profilm).
- Many products contain hypo-chlorite that can release chlorine. **Chlorine** gas is an irritant to eyes and the respiratory tract. Mixing hypo-chlorite with amounts of acid cleaners or formaldehyde causes production of toxic gases.
- Other classes of disinfectants, such as **phenolics** (eg. Virkon) have the potential to be toxic if handled improperly. Contact with skin and inhalation of fumes should be avoided during use of all classes of disinfectant.
- Use a dust mask, safety goggles and rubber gloves when mixing and applying disinfectants.

Refer to the precautions listed on the label and the MSDS (Material Safety Data Sheets) of the product you are using, and follow those precautions!



Fire Prevention Protects Your Investment

The leading causes of fires in barns are:

- careless smoking
- faulty electrical system
- faulty heating equipment
- improper storage or use of flammable liquids

Assess your facilities for potential fire risk areas. These can include your electrical system, heaters, or areas where power tools, cleaning supplies, fuel and other flammable solvents are stored.

How can I be “Fire Safe”?

- Do not overload wiring. Inspect and replace old or defective wiring and chewed cords with new circuits or electrical cords.
- Keep your barn clean – build-up of dust, trash or spider webs in the electrical system is a fire hazard.
- Remove trash and flammable materials from the area around motors and heaters.
- Heat lamp cords should be short enough that they become unplugged if a lamp should fall to the ground.
- Never permit smoking in barns or near flammable materials.
- Ensure smoke detectors are functional, and inspect them regularly.

What should I do if a fire starts?

- Call 911 or your local fire department. Evacuate the building and close windows and doors as you exit.
- All workers should be aware of the location and proper use of fire extinguishers. ***Fight the fire only if it remains small and only after calling the fire department.***
- Barns should have A.B.C.-rated extinguishers that are effective against electrical, petroleum or wood fires. ***Never use water on electrical fires or petroleum fires - this will cause them to spread faster.***

**P.A.S.S. stands for:
Pull the pin (or Press the lever);
Aim at the base of the fire; Squeeze the handle;
Sweep from side to side.**

The real danger of fire is in the smoke, toxic gases and rapid loss of oxygen. If fire continues to spread, get out of the building immediately!

Performing Hot Work on the Farm

Hot work is defined in the legislation as “work that produces arcs, sparks, flames, heat or other sources of ignition”. This includes welding, soldering and cutting a wide variety of materials.

Please refer to the *Saskatchewan Occupational Health and Safety Regulations, 1996* for complete information and requirements relating to Hot Work.

Fires or explosions can result from quick, impromptu hot work jobs in areas not intended for that work. This can include arc welding, cutting with torches or grinding which are a common cause of fires, particularly inside barns and farm buildings where combustible gases or materials are present. Sparks falling into below ground manure pits have caused explosions and fires on Canadian farms due to the explosive quality of the methane gas. Other heat sources such as torches used to thaw frozen pipes and water lines have also been connected to barn fires.

To reduce the risk:

- Relocate hot work projects to well-ventilated areas outside buildings, with no combustibles nearby.
- If relocation is not possible:
 - Consider replacing the object.
 - Ensure the area is well ventilated to avoid a build-up of combustible gases. Turn on all fans and open all curtains (if applicable). Consider using a portable exhaust system to provide ventilation to the area.
 - Remove all combustible materials from the hot works area and place non-combustible pads under the work area (e.g., sheet steel or welding mats) to catch any sparks/debris.
 - Have a minimum 10-lb ABC fire extinguisher readily accessible to the hot work location.

The Saskatchewan Occupational Health and Safety Regulations legislate Employers’ and Employees’ responsibilities pertaining to hot work on the farm.

■ Employer Responsibilities

- Workers, subcontractors or anyone likely to undertake hot work in the facility must have the appropriate training or information prior to the work being done.
- Written procedures should be implemented to ensure ongoing attention to safety leading up to and during the hot work. A Hot Work Permit process is advisable. This requirement ensures the health and safety of workers who perform any hot work where flammable substances could be present and keeps the employer informed of planned hot work.
- Where a flammable substance is, or may be, present, the employer, contractor (or worker) shall ensure that no hot work is performed until the surrounding atmosphere is tested for flammable substances that are or may be present that could ignite or explode during the proposed work.
- Employers must provide Personal Protective Equipment (PPE) and protective clothing designed specifically for Hot Work.

■ Employee’s Responsibilities

Workers or sub-contractors must use employer provided Personal Protective Equipment (PPE) for Hot Work. This includes industrial eye or face protectors that can protect their eyes and faces from flying objects or particles, splashing liquids, molten metal or ultraviolet, visible or infrared radiation. Fire resistant outer clothing provided by the employer and meet the approved industry standard and be appropriate to the risk.

Additional information is available on line from the following:

- The Saskatchewan Occupational Health and Safety Regulations, 1996
- Saskatchewan Construction Safety Association
- Canadian Centre for Occupational Health and Safety
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). Barn Fire Prevention.

Practice Good Hygiene

Diseases that are transmissible from animals to humans are called zoonoses. Although it is very unlikely, influenza and salmonellosis can be transmitted from pigs to humans, as can the bacteria causing brucellosis, erysipelas and TB. Equally rare are cases where parasites from pigs infect humans who work with those animals.

Diseases may be transmitted through urine, faeces, blood and saliva. Handling of afterbirth, stillborns, abortions and dead pigs can also transmit disease. Diseases can be introduced to the human through open wounds, through ingestion or inhalation.

What can I do to avoid zoonoses?

- Wear gloves and a mask regularly - always when handling dead animals or rodents.
- Wash hands thoroughly with hot, soapy water, and use an antiseptic soap after working with animals, especially before eating to avoid ingestion of disease agents.
- Cuts and scrapes should be covered when working with animals - this will prevent disease agents from entering open wounds.
- Keep facilities clean, dry and properly ventilated, and maintain a veterinarian-prescribed vaccination and de-worming program - this reduces the level of disease your pigs will carry.
- Maintain a rodent-free barn - the infective dose of *Salmonella typhimurium* (human food poisoning) can be carried in just one mouse's faecal pellet. Also, be aware of the potential for Hanta Virus when cleaning up rodents and rodent droppings (i.e., sweeping). Wear a mask and rubber or plastic gloves and wash and disinfect the area after clean-up. Use a respirator with one of the following NIOSH approval numbers: N100, R100 or P100.

General Safety – How Can I do My Part?

Regular maintenance can help to keep a pork production unit a safe place to work. Weekly inspections should be scheduled into the work routine of the unit. This expenditure of 2-3 hours a week will go a long way in keeping workers safe and in preventing major equipment catastrophes.

What to do on routine maintenance inspections

- Carry a grease gun, oil can and some basic tools.
- Inspect each room thoroughly. Be sure to check ceiling, flooring, walls, pen partitions, crates, feeders and waterers for any signs of wear or disrepair.
- Fix minor problems immediately, before they become major problems.
- Remember to look at door hinges, feed cart wheels, and other moving parts - keeping parts moving freely and noiselessly will make your job easier, and help keep animals calm.
- Ensure there is an electrical lock-out so no one can accidentally turn on a breaker while you are servicing electrical equipment.
- Make note of major repairs that are required or soon will be required.
- Return tools to the proper storage place.
- Report repairs to a manager or supervisor

General inspections should be done by the manager on a regular basis such as once a week. Continuous inspections should be done by all staff as they work. Accident investigations are necessary if an accident does happen to prevent it from happening again.

EMERGENCY PLANNING



Why have an emergency plan?

A definite plan to deal with major emergencies is an important element of OH&S programs.

Besides the major benefit of providing guidance during an emergency, developing the plan has other advantages. You may discover unrecognized hazardous conditions that would aggravate an emergency situation and you can work to eliminate them. The planning process may bring to light deficiencies, such as the lack of resources (equipment, trained personnel, supplies), or items that can be corrected before an emergency occurs. In addition, an emergency plan promotes safety awareness and shows the organization's commitment to the safety of workers.

The lack of an emergency plan could lead to severe losses such as multiple casualties and possible financial collapse of the organization.

Since emergencies will occur, preplanning is necessary. An urgent need for rapid decisions, shortage of time, and lack of resources and trained personnel can lead to chaos during an emergency. Time and circumstances in an emergency mean that normal channels of authority and communication cannot be relied upon to function routinely. The stress of the situation can lead to poor judgment resulting in severe losses. A well thought out, well organized emergency response plan will help to eliminate these issues.

The lack of an emergency plan could lead to severe losses such as multiple casualties and possible financial collapse of the organization.

What is the overall objective of the plan?

An emergency plan specifies procedures for handling sudden or unexpected situations.

The objective is to be prepared to:

- Prevent fatalities and injuries.
- Reduce damage to buildings, stock, and equipment.
- Protect the environment and the community.
- Accelerate the resumption of normal operations.

Development of the plan begins with a vulnerability assessment. The results of the study will show:

- How likely a situation is to occur.
- What means are available to stop or prevent the situation.
- What is necessary for a given situation.

From this analysis, appropriate emergency procedures can be established.

At the planning stage, it is important that the relevant individuals or groups be asked to participate. Members of the team can include:

- employees with knowledge of the work
- supervisor of the area or work
- safety officer
- health and safety committee
- union representative, if applicable
- employees with experience in investigations
- “outside” experts
- representative from local government, police, fire, or ambulance

Where appropriate other organizations should also be consulted, especially when your organization’s plan involves using outside resources, such as fire, police or ambulance. In some situations, one organization may develop shared response teams with neighbouring organizations.

In all situations, communication, training and periodic drills will help make sure the plan is executed well.

Note: *In some cases, other authorities may have jurisdiction, such as if a serious injury or fatality occurred. Your organization should establish, implement, and maintain a procedure to coordinate managing incidents with the authority having jurisdiction (e.g., police, OH&S inspectors, etc.). This coordination may include the authority taking control of the incident scene.*

Developing Your Emergency Response Plan

1. Your emergency response plan should be simple.
2. Procedures must be written by management and stored in a place accessible to all employees.
3. Draw a floor plan of your barn site. Include all buildings, stationary equipment, manure storage facilities, roadways, power lines, electrical panels, water sources, etc.
4. Identify and highlight all potential hazard areas described in this manual.
 - Physical Hazards - e.g., high noise, dust, power tools, poor housekeeping.
 - Chemical Hazards - e.g., detergents, vaccines and medications, toxic gases such as hydrogen sulfide.
 - Biological Hazards - e.g., infectious material from sick or dead animals (sick pens, deadstock bin).
 - Psycho-Social Hazards - e.g., pressures which cause stress, worry, fatigue.
 - Ergonomic Hazards - e.g., machinery or equipment design that does not fit the person using it, repetitive movement and monotonous work processes.
5. Identify all exits.
6. Identify position of all fire and safety equipment such as fire extinguishers, MSDS sheets, safety harnesses and lifelines, etc. Make sure this information and equipment is up-to-date and ready to use.
7. Have a list of names, telephone numbers and addresses of the company president, vice-president and manager/supervisor(s) and staff.
8. List the person responsible for contacting family members in the event of an emergency. This person should have written authority to provide this information.
9. Post the following emergency phone numbers beside each telephone:
 - police department
 - fire department
 - ambulance
 - hospital
 - poison control
 - Veterinarian
 - mutual aid agreements with other municipalities (fire department, ambulance, etc.)
 - Legal land description and directions to the farm
 - Saskatchewan Ministry of Labour and Occupational Health
10. Plan for every type of emergency whether illness, injury, fatality, loss of property or equipment. Identify all tasks that need to be performed. List all company names, addresses and telephone numbers that may be required to assist you with your emergency (for example: trucking companies, other swine facilities, etc.)
 - power failures
 - health emergencies
 - attack on a worker by an aggressive animal
 - fire or explosions
 - water line breakage
 - flood
 - electrocution
 - workers working alone
 - failure of worker to arrive safely at work or at home
11. Establish an evacuation procedure. For example, in the event that toxic gas levels become dangerous:
 - get out of the area
 - sound the alarm
 - put on a breathing apparatus (if you have one and are trained to use it)
 - rescue then revive the victim(s)
 - get medical attention
12. Have at least one person in the barn trained in CPR and first aid.
13. Develop a good checklist for doing barn inspections, looking for needed repairs and other potential hazards. Conduct inspection regularly.
14. Plan for safe storage of vital company records.
 - insurance documents
 - animal records
 - bank records
 - payroll records
 - Workplace Safety and Health records
15. Discuss this plan with all employees, practice emergency procedures regularly and update your emergency response plan at least annually.

Business Continuity Plan - Pandemic

What is a business continuity plan?

A business continuity plan is a document that outlines how an organization will continue to function during and after an emergency or event. It involves planning how your key services or products can continue.

Please remember... each business is unique – the topics listed in this document are general suggestions. You will need to create a specific plan that best suits your business and operational needs.

Is a pandemic plan different than a regular business continuity or resumption plan?

In some ways, yes.

Traditionally, most business continuity plans focus on what will happen if the building or equipment is damaged. In other scenarios, the plan may assume that people will be able to return to a building after a single event (such as after a storm, or if there is a utility outage).

However, if there is a serious infectious disease outbreak, such as a pandemic, you must plan for the workers being unable to report to work for a period of time. During a pandemic, businesses, social organizations, or schools may be required to close by order of health officials to help slow the spread of the illness. These steps will influence how many people may be available to report to work.

It is important to plan to have your core business activities to remain operational for several weeks or months with limited staff.

Please see the booklet [Business Continuity Plan: Infectious Diseases](#) for more information found online at the Canadian Centre for Occupational Health and Safety.

How many people will be away from the workplace during a pandemic?

It is hard to say with certainty. Every pandemic is different. It will depend on the virus's "viral ability" – that is, how easily the virus spreads and how sick people become. Workers may be away from work for various reasons (e.g., illness, caregiving, school closure).

Also note, as stated by the Government of Canada: "The pattern of disease is different in pandemics than in seasonal influenza. Pandemics may arrive outside of the usual influenza season and typically have more than one wave of illness. The total duration of a pandemic is likely to be 12 to 18 months."

It will be important to make sure your plan will accommodate staff absences for more than a single period of time.

What are some effects of a pandemic on a business?

Possible effects on business from a pandemic can include:

- reduced labour supply, including your regular workers or availability of contractors or temporary workers
- reduced business or cancelled customer orders
- interruption in getting supplies or materials (especially if goods are imported by air or land)
- change in demands (for example: increased internet use, decreased tourism/travel)
- reductions or restrictions on public meetings or gatherings (including schools, sports, clubs, theatre, community centres, restaurants, religious gatherings, etc.)
- restrictions on travel (regional, national, or international)
- reduced availability of health care or home care services
- in more severe situations, disruptions in services such as telecommunications, financial/banking, water, electricity, gasoline/fuels, medicine, or the food supply

How do you set priorities for your plan?

In general, when creating a business continuity plan, determine what element is critical and how the loss of this element will affect the business.

1. Identify critical processes, operations, and functions.
2. Identify key internal and external dependencies – those things, people, or other business you rely on.
3. Identify what else can affect your business.

When planning for your priorities, examine:

Personnel – Identify and train back ups for essential functions, including chain of command (management). Be sure you have consulted with staff, including any applicable union or collective agreements.

Equipment – Make sure the available equipment meets the identified needs.

Availability of assets – Make sure that facilities, utilities, computers, machinery, or tools also meet your needs (e.g., access to internal systems by staff working from home).

Business commitments – Research legal implications for level of service arrangements (e.g., for non-performance or late delivery).

Accounting – make sure you can continue your payroll, finances, etc.

What are elements that should be included in a business continuity plan for pandemics?

How detailed your plan is will depend on the type of business, how complex your organization is, and its size. Allow your plan to be flexible and proportional to match the level of threat that is occurring at that time. Your plan should include health, safety, human resources, and management elements.

Options include:

- Document guidelines for management and business decisions – remember, anyone can get sick.
- Create a pandemic management team that assigns who will do what tasks, establishes chain of command, coordinates prevention activities, etc.
- Make decisions about when to stay open, when to close to customers, and when to close completely.
- Assign a person or team, where appropriate, to help assess the health of workers (e.g., if the worker may be coming down with an illness).
- Cross train workers to make sure essential functions will continue (e.g., payroll, customer service).
- Provide handwashing facilities and/or alcohol-based hand sanitizers.
- Have a period of time between shifts to clean surfaces such as tables, door knobs, hand rails, or shared telephones and keyboards.
- Have up-to-date sick leave policies. NOTE: Be aware that doctors may have limited availability to provide sick-leave documentation.
- Maintain an up-to-date list of your staff and your clients (e.g., telephone trees, call-in numbers, hot lines for information, broadcast e-mails)
- Develop communication methods to reach all staff, especially if staff are working remotely.
- Develop methods to conduct your business, including using the internet, cloud-based workspaces, phone, video conferencing, etc.
- Develop methods that allow workers to use flexible work options, or telework/work remotely.
- Increase the distance between people (e.g., install a protective barrier for those working with the public, increase the distance between workstations, use larger meeting rooms).
- Consider providing transportation for those staff that use public transportation.
- Consider psychosocial issues (e.g., financial stress, caregiver burnout, occupational stresses, stigma, or social exclusion).
- Consider postponing or cancelling face-to-face meetings (including internally) as well as unnecessary travel.
- Create small working groups (e.g., a factory may keep the same group of people together on the same shifts).

What are good practices to help reduce the spread of infectious diseases?

Good health habits are important in preventing the spread of infectious diseases. Steps to take include:

- frequent hand washing with soap and water
- using alcohol-based hand sanitizers when soap and water are not available
- avoiding close contact with sick people
- coughing and sneezing into your elbow, or use a tissue (and throw away the tissue immediately)
- avoiding touching your eyes, nose and mouth
- using good hygiene practices, such as cleaning and disinfecting surfaces likely to be contaminated and touched by others, or practicing social distancing (e.g., keeping 1-2 metres between individuals, using teleconferencing or remote work technology)

In general, people should be encouraged to stay home **if they are ill, or if they think they are ill**. Allow time for complete recovery and a healthy return to work.

It is possible that it can spread from contact with infected surfaces or objects – when you touch a surface or object that has the virus on it and then touch your mouth, nose, or eyes.

Source: Canadian Centre for Occupational Health and Safety

<https://www.ccohs.ca/oshanswers/hsprograms/planning.html>

Cold	Seasonal Influenza	COVID-19
Chills but fever is rare	Fever	Fever
Cough, chest discomfort (mild but may last a while)	Cough, chest discomfort (dry cough can be severe)	Cough
Body aches, pains (mild)	Body aches, pains (can be severe)	Difficulty breathing or shortness of breath
Tiredness (you can still do your daily activities)	Bedridden (you may feel extremely exhausted)	
Headache (mild)	Headache (can be severe)	
Sore throat	Sore throat	
Stuffy, runny nose, sneezing	Stuffy, runny nose	

Complications can include...

Lung infections Throat infections Ear infections Sinus infections	Pneumonia Pre-existing health conditions getting worse (such as asthma) Hospitalization Death	Pneumonia in both lungs Death
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Table adapted from: Government of Canada, 2019. *Cold or flu: know the difference / Know the flu facts* - Fact sheet and Government of Canada, 2020. Coronavirus disease (COVID-19): Frequently asked questions (FAQ)

Source: Canadian Centre for Occupational Health & Safety

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Additional information is available at https://www.ccohs.ca/oshanswers/hsprograms/planning_pandemic.html

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Resources & Information

AGRICULTURE HEALTH AND SAFETY NETWORK CCHSA

University of Saskatchewan

Noise Induced Hearing Loss Among Farmers

https://cchsa-ccssma.usask.ca/aghealth/documents/fact-sheets/Noise%20Induced_FS_1.pdf

CANADIAN AGRICULTURE SAFETY ASSOCIATION

<https://www.casa-acsa.ca/>

GOVERNMENT OF SASKATCHEWAN FARM SAFETY

<http://www.saskatchewan.ca/business/safety-in-the-workplace>

MINISTRY OF LABOUR RELATIONS AND WORKPLACE SAFETY FARM SAFETY PROGRAM

<http://publications.gov.sk.ca/documents/283/108865-Farm%20Safety%20Program.pdf>

Note: This is not a complete list of all Saskatchewan safety-related resources.

Training

CANADIAN RED CROSS – FIRST AID AND CPR TRAINING

<https://www.redcross.ca/training-and-certification>

FIRST AID FOR LIFE

Saskatoon, SK (306) 933-2472

<https://courses.firstaidforlife.ca/>

PRAIRIE SWINE CENTRE

H₂S On-line Training

<http://www.prairieswine.com/training/h2s-awareness-training/>

SASKATCHEWAN SAFETY COUNCIL ONLINE AGRICULTURE TRAINING

<http://www.sasksafety.org/resources/farm-safety>

ST. JOHN AMBULANCE SASKATCHEWAN FIRST AID AND CPR TRAINING

<https://www.sja.ca/English/Pages/default.aspx>

WORKSAFE SASKATCHEWAN ON-LINE WHIMIS TRAINING

<http://www.worksafesask.ca/training/online-courses/online-whmis-training/>

References

- American Conference of Governmental Industrial Hygienists Worldwide. 1999. 1999 TLVs® and BEIs® Based on the Documentations for Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices.
- Atwill, E.R. 1999. Is Livestock Manure a Risk to Public Health? *Advances in Pork Production*. 10:75-80.
- Ayerst Veterinary Laboratories. 1998. Good Production Practices for Swine Vaccination. Guelph, Ontario.
- Baker, D.E., and R. Lee. 1993. Animal Handling Safety Considerations. University Extension Document GO1931. University of Missouri-Columbia.
- Bird, N., J.J.R. Feddes and W.D. Morrison. Protecting Workers in Livestock Buildings from Dust and Gases, M-9707 92:09. Canada Plan Service. (Brochure).
- Bodman, G.R. 1992. Farmstead Safety Evaluation Guide. NebGuide G92-1080-A. Cooperative Extension. University of Nebraska-Lincoln. (Brochure).
- Canadian Centre for Occupational Health and Safety
Centre for Agricultural Medicine. 1997. Hearing Conservation for Farm Families. University of Saskatchewan. (Brochure).
- Choiniere, Y. and J.A. Munroe. 1993. Air Quality Inside Livestock Barns. Agdex 400/717. Ontario Ministry of Agriculture and Food. (Brochure).
- DHHS (NIOSH). 2000. How to Protect Yourself From Needlestick Injuries. Publication Number 2000-135. (Brochure). Donham, K.J., P. Haglund, Y. Peterson, R. Rylander and L. Belin. 1989.
- Environmental and health studies of farm workers in Swedish swine confinement buildings. *British Journal of Industrial Medicine*. 46:31-37.
- Doss, H.J. 1994. Fire Extinguisher Safety, Location and Use. Centre for Michigan Agricultural Safety and Health. University of Michigan. (Brochure).
- Employer and employee responsibility checklists adapted from *Grille d'auto-évaluation à l'intention des entreprises agricoles*. Commission de la santé et de la sécurité du travail. Gouvernement du Québec. 1998.
- Gadd, J. 1999. Is Hygiene Your Achilles Heel? *The Pig Pen*. 5(4):2-6.
- Grandin, T. 1998. Review: Reducing Handling Stress Improves Both Productivity and Welfare. *Professional Animal Scientist*. 14:1-10.
- Grandin, T. 1989. Behavioural Principles of Livestock Handling. *Professional Animal Scientist*. December: 1-11.
- Health Canada. WHMIS Web Page. <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/occupational-health-safety/workplace-hazardous-materials-information-system.html>
- Iowa State University Extension. 1992. Livestock Confinement Dust and Gases: Farm and Operator Safety. Iowa State University. (Brochure).
- Lemay, S. 1999. Barn Management and Control of Odours. *Advances in Pork Production*. 10:81-91. Lemay, S., and L. Chenard. 2001. "What Should I Know About Air Quality in Pig Buildings?" *Prairie Swine Centre. Proceedings: Manitoba Swine Seminar*. 15:143-157.
- Manitoba Pork. Smart Pig Handling Video Series. www.manitobapork.com
- McCallister, M. 1998. Disinfection of Swine Barns. *Manitoba Agriculture and Food*. Downloaded November 25, 2000. <http://www.gov.mb.ca/agriculture/livestock/pork/bab01s14.html>.
- National Pork Board. 2017. Pork Checkoff: Avoid Needle Sticks. www.pork.org/blog/avoid-needle-sticks/
- NIOSH Alert. 1996. Preventing Carbon Monoxide Poisoning From Small Gasoline-Powered Engines and Tools. Publication No. 96-118. National Institute for Occupational Safety and Health. (Brochure).
- Rosenmar, K. 1992. Zoonoses - Animals Can Make You Sick. Michigan State University Extension. Michigan State University. #U05/CC-4506052-01. (Brochure).
- Saskatchewan Labour, Occupational Health and Safety Division. Occupational Health and Safety Regulations (1996) (www.labour.gov.sk.ca/safety)
- Saskatchewan Occupational Health and Safety Division. "Healthy and Safe Practices in Pork Production: Technical Modules" (www.labour.gov.sk.ca/safety/porkproduction)
- Senthilselvan, A., Y. Zhang, J.A. Dosman, E.M. Barber, L.E. Holfeld, S.P. Kiryuchuk, Y. Cormier, T.S. Hurst and C.S. Rhodes. 1997. *American Journal of Respiratory Critical Care Medicine*. 156:410-417.
- Tripp, R.S., J.M. Shutske, S.K. Olson and M. Shermann. Needs Assessment of Employers in Swine Production Facilities Regarding Employee Health and Safety. *Journal of Agricultural Safety and Health*. 4(4):231-243.
- University of Wisconsin-Madison Extension. Fire Prevention and Safety on the Farm. University of Wisconsin-Madison. (Brochure).
- Von Essen, S. and K. Donham. 1999. Illness and Injury in Animal Confinement Workers. *Occupational Medicine*. 14:337-349.
- Western Producer. Investigation finds no blame in manure poisoning deaths. Downloaded May 10, 2004. <http://www.producer.com/registered/articles/2000/0803/news/20000803news03.html>
- Wenger, I. 1999. Air Quality and Health of Career Pig Barn Workers. *Advances in Pork Production*. 10:93-101.
- Zarn, I. 1995. Occupational Safety and Health in the Swine Barn. Assiniboine Community College Distance Education Manual.

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